

SHARP

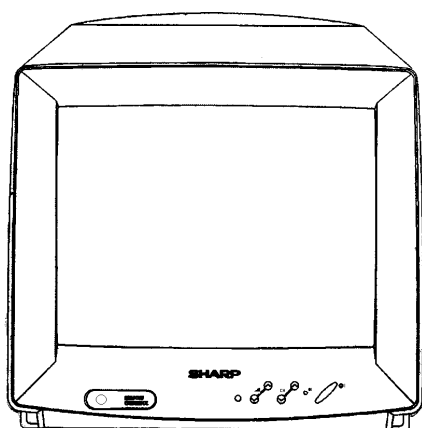
SERVICE MANUAL

SEJB37GQ2*S02

Issued: 9th June '00

SQUAD CHASSIS

PAL SYSTEM COLOUR TELEVISION



**MODELS: 37GQ-20S
37GQ-21S**

In the interests of user safety (required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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SHARP CORPORATION

This document has been published to be used for after sales service only.

ELECTRICAL SPECIFICATIONS

- | | |
|--|--|
| <ul style="list-style-type: none"> •Power Input 220V-240 Volts AC 50Hz •Power Consumption <ul style="list-style-type: none"> Normal Operating.....30W Stand-by Operating.....7.5W
(Method IEC60107) •Audio Power Output Rating 2W (MPO) Speaker.....32Ω 2W, 8cm Round, 1pc Convergence.....Self Converging System Focus.....Bi-Potencial Electrostatic Sweep Deflection.....Magnetic •Picture Intermediate Frequencies <ul style="list-style-type: none"> B/G.....38.9MHz | <ul style="list-style-type: none"> •Sound Carrier Trap <ul style="list-style-type: none"> B/G.....33.4MHz •Adjacent Sound Carrier Trap <ul style="list-style-type: none"> B/G.....40.4MHz •Adjacent Picture Carrier Trap <ul style="list-style-type: none"> B/G.....30.9MHz •Aerial Input Impedance <ul style="list-style-type: none"> VHF/UHF.....75 ohm Unbalanced •Tuning Ranges <ul style="list-style-type: none"> B/G.....48.25MHz thru 855.25 MHz |
|--|--|
- CATV Special Channels

•White Level

Set brightness control to get total picture tube cathode current of 600 milliamperes under no signal condition. Maximum necessary correction of each picture tube cathode current to get 8550 degree K-20 MPCD screen temperature should not exceed 15% of its original value.

X=0.290

Y=0.300

Specifications are subject to change without prior notice.

WARNING

The chassis in this receiver is partially live. Always use an isolation transformer when servicing this chassis.
To prevent electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

MODEL DESTINATION & DIFFERENCES:

37GQ-20S DE: Austria

37GQ-20S DES: Germany (Silver)

37GQ-20S ES: Spain

37GQ-20S IT: Italy

37GQ-20S NL: Holland

37GQ-20S SE: Sweden

37GQ-21S ESY: Spain (Yellow, with headphones)

37GQ-21S ESR: Spain (Red, with headphones)

IMPORTANT SERVICE NOTES

Maintenance and repair of this receiver should be done by qualified service personnel only.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove static charge from it by connecting a 10K ohm resistor in series with an insulated wire (such as test probe) between picture tube ground tag and high voltage lead. (AC line cord should be disconnected from AC outlet).

1. The Picture tube in this receiver employs Integral Implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage completely.

X-RAY

This receiver is designed so that any X-Ray radiation is kept to an absolute minimum. Since certain malfunctions and servicing may produce potentially hazardous radiation with prolonged exposure at close range, the following precautions should be observed:

1. When repairing the circuit, be sure not to increase the high voltage to more than 25.5 KV, (at beam 1000 μ A) for the set.
2. To keep the set in a normal operation, be sure to make it function on 22.4KV $\pm$ 1.5KV (at beam 800 μ A) in the case of the set. The set has been factory - adjusted to the above mentioned high voltage. Always check the high voltage if there is any possibility that it might have changed as a result of the repair.
3. Do not substitute a picture tube with unauthorized types and/or brands which may cause excess X-Ray radiation.

BEFORE RETURNING THE RECEIVER

In addition to the above checks, the following safety checks should also be carried out before returning the unit to the user.

1. Inspect all leads and dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts.
2. Inspect all protective devices such as non-metallic control knobs, insulating fish papers, cabinet backs, adjustment and compartment covers or shields, insulation resistor-capacity networks, mechanical insulators etc.

SERVICE ADJUSTMENT

•SERVICE MODE FUNCTION

This mode function is provided to assist with the settings of those adjustments that may vary from one Picture Tube to another, or between models.

In order to use the Service Mode

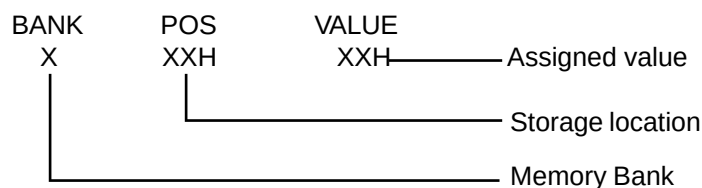
1. Press main switch to OFF.
2. Connect Test Pattern signal to antenna terminal.
3. Press ∇ $\triangleleft$, CH ∇ and main switch to ON simultaneously or press $\wedge$ $\triangleleft$, CH $\wedge$ and main switch to ON simultaneously.
4. -SERVICE- will appear on screen. Service mode is now entered.
5. Select adjustment using buttons $\wedge$ CH $\wedge$.

To exit Service Mode, press main switch to OFF or press MENU button on R/C.

	Displayed on screen	Hexadecimal / Decim. Range	Function
a.	SERVICE		Indicates operative Service Mode.
b.	NVM		Access to NVM memory
c.	AGC GAIN	00 ~ 03H	Auto Gain Control
d.	AGC STR	00 ~ 63H	Auto Gain Starting Point
e.	PLL	S, L, VL, N	Line PLL time constant
	PAL	4-43, 3-58, SECAM, NTSC	Colour system.
		4-43, NTSC 3-58, AUTO PNS, AUTO PN	
f.	AUTO	AUTO, 50HZ, 60HZ	Field Frequency
g.	B-GAIN	0 ~ 63d	Blue Gain
h.	G-GAIN	0 ~ 63d	Green Gain
i.	G-DC	0 ~ 63d	Green Cut
j.	R-GAIN	0 ~ 63d	Red Gain
k.	R-DC	0 ~ 63d	Red Cut
l.	HOR POS	0 ~ 63d	Horizontal Position shift
m.	VERT POS	0 ~ 63d	Vertical Position shift
n.	VERT AM	0 ~ 15d	Vertical Amplitude shift

6. For « a » Selection:

NVM storage location settings variants.



In order to have access to NVM «MENU» button should be pressed. To obtain a higher or lower Memory Bank, buttons ∇ $\triangleleft$ $\wedge$ should be pressed respectively. To have access to the desired Storage Location, buttons ∇ CH $\wedge$ should be pressed, as required to obtain a higher or lower location, respectively.

Bear in mind that, for storage location indication a hexadecimal numerical system is used, instead of a decimal system.

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, 10, 11, ...19, 1A, 1B, 1C, 1D, 1E, 1F, 20, 21, ... 99, 9A, 9B, 9C, 9D, 9E, 9F, A0, A1, ..., B0, ..., C0, ..., D0, ...E0, ..., F0, F1, F2, F3, F4, F5, F6, F7, F8, F9, FA, FB, FC, FD, FE, FF.

From the last location FF to the first 00 can be reached by increasing and from first to last by decreasing. Once the storage location to be varied has been selected, its value can be modified by the bits that form part of the storage location numerical buttons, numbers «0» to «7», respectively. This switches the binary number from and between 0 and 1 each time one of the buttons is pressed.

«0»: 2⁰=1, «1»: 2¹=2, «2»: 2²=4, ...

7. For «b,c» and «g» thru «n» selections:

Adjustment to a selection can be made by pressing buttons ∇ ▴.

8. For «d» thru «f» selections:

Adjustment to a selection can be made by pressing button ▴ ▽.

NVM LIST DESCRIPTION			
BANK	ADDRESS	DESCRIPTION	VALUE
00H	00H	ZONE FOR TUNNING INFORMATION (BEGIN)	CAH
	3BH	ZONE FOR TUNNING INFORMATION (END)	10H
	3CH	STAND BY: 44H -> ON 40H -> OFF	44H
	3DH	OPTION BYTE: 10XXXXXX -> HOTEL MODE 1 (START IN PRG1. NO TUNNING OPTION. VOLUME LIMITATION). 11XXXXXX -> HOTEL MODE 2 (START IN PRG 1. NO TUNING OPTION. VOLUME LIMITATION. START IN SCART MODE. OUT FROM STDBY WITH SSW. XXDDDDDD -> VOLUME ATTENUATION: 0AH -> 100%, 00H -> 0%	00H
	3EH	DIODE_NVM: XXXXXXX0 -> SYMBOLIC OSD. XXXXXXX1 -> CHARACTER OSD XXXXXX1XX -> ENGLISH LANGUAGE.	04H
	3FH	DIODE2_NVM: XXXXXXX1 -> FRENCH STANDARD XXXXXX01X -> BG STANDARD XXXXXX10X -> L/L' STANDARD XX1XXXXX -> AUDIO FOR UK X1XXXXXX -> AUTOINSTALLATION ON 1XXXXXXX -> ONLY UHF BAND.	00H
01H	00H	ZONE FOR TUNNING INFORMATION (BEGIN)	10H
	3BH	ZONE FOR TUNNING INFORMATION (END)	10H
	3DH	UHFLOW: LOW WINDOW LIMIT FOR UHF BAND	00H
	3EH	VHF3LOW: LOW WINDOW LIMIT FOR VHF3 BAND	00H
	3FH	VHF1LOW: LOW WINDOW LIMIT FOR VHF1 BAND	00H
02H	00H	RESERVED ZONE FOR PROGRAMME NAMES (BEGIN)	24H
	3FH	RESERVED ZONE FOR PROGRAMME NAMES (END)	24H

03H	00H	ONE CHIP REGISTER 00:	80H
	01H	ONE CHIP REGISTER 01:	05H
	02H	ONE CHIP REGISTER 02:	9FH
	03H	ONE CHIP REGISTER 03:	20H
	04H	ONE CHIP REGISTER 04:	00H
	05H	ONE CHIP REGISTER 05:	CCH
	06H	ONE CHIP REGISTER 06:	44H
	07H	ONE CHIP REGISTER 07:	34H
	08H	ONE CHIP REGISTER 08:	21H
	09H	ONE CHIP REGISTER 09:	A1H
	0AH	ONE CHIP REGISTER 0A:	32H
	0BH	ONE CHIP REGISTER 0B:	B2H
	0CH	ONE CHIP REGISTER 0C:	32H
	0DH	ONE CHIP REGISTER 0D:	20H
	0EH	ONE CHIP REGISTER 0E:	20H
	0FH	ONE CHIP REGISTER 0F:	18H
	10H	ONE CHIP REGISTER 10:	15H
	11H	ONE CHIP REGISTER 11:	00H
	12H	ONE CHIP REGISTER 12:	00H
	13H	ONE CHIP REGISTER 13:	20H
	14H	ONE CHIP REGISTER 14:	20H
	15H	ONE CHIP REGISTER 15:	00H
	16H	ONE CHIP REGISTER 16:	1FH
	17H	ONE CHIP REGISTER 17:	20H
	18H	ONE CHIP REGISTER 18:	2BH
	19H	ONE CHIP REGISTER 19:	00H
	1AH	ONE CHIP REGISTER 1A:	90H
	1BH	ONE CHIP REGISTER 1B:	90H
	1CH	ONE CHIP REGISTER 1C:	90H
	1DH	ONE CHIP REGISTER 1D:	00H
	1EH	ONE CHIP REGISTER 1E:	00H
	1FH	ONE CHIP REGISTER 1F:	00H
	20H	VPOS_50 (VERTICAL POSITION) 4/3 50 Hz.	12H
	21H	VAMP_50 (VERTICAL AMPLITUDE) 4/3 50 Hz	0FH
	22H	VPOS_60 (VERTICAL POSITION) 4/3 60 Hz	0FH
	23H	VAMP_60 (VERTICAL AMPLITUDE) 4/3 60 Hz	0FH
	24H	HSHIFT_60 (HORIZONTAL SHIFT) 60Hz	1DH
	25H	HSHIFT_50 (HORIZONTAL SHIFT) 50Hz	22H
	26H	FINVFH: STEP FOR FINE TUNING IN VHF BAND	00H
	27H	VHF1_STEP: THICK TUNING STEP FOR VHF1 BAND	A4H
	28H	VHF3_STEP: THICK TUNING STEP FOR VHF3 BAND	55H
	29H	UHF_STEP: THICK TUNING STEP FOR UHF BAND	55H
	2AH	LP_COARSE: THICK TUNING ADJUSTMENT FOR L'	02H
	2BH	BG_COARSE: THICK TUNING ADJUSTMENT FOR L AND BG	0AH
	2CH	BG_FINE: FINE TUNING ADJUSTMENT FOR L AND BG	00H
	2DH	LP_FINE: FINE TUNING ADJUSTMENT FOR L'	00H
	2EH	DELAY SEARCH: XXXXXXX0 -> SHOWS 'PROGRAMME -' DURING AUTOSEARCH. XXXXXXX1 -> DHOWS 'AUTO SEARCH' DURING AUTOSEARCH	00H
	2FH	VHF1_SP: STEP FOR AUTO SEARCH IN VHF1 BAND	0AH
	30H	VHF3_SP: STEP FOR AUTO SEARCH IN VHF3 BAND	05H
	31H	UHF_SP: STEP FOR AUTO SEARCH IN UHF BAND	03H
	32H	OLD_PROGRAM: FOR FLASHBACK RETURN	02H
	33H	UHFHIGH: UPPER WINDOW LIMIT FOR UHF	01H
	34H	VHF3HIGH: UPPER WINDOW LIMIT FOR VHF3	01H

	35H	VHF1HIGH: UPPER WINDOW LIMIT FOR VHF1	01H
	36H	PRG_NUMBER: CURRENT PROGRAMME NUMBER	03H
	37H	WAITSUP: UPPER LIMIT DELAY TIME FOR AUTOSEARCH.	0FH
	38H	WAITINF: LOWER LIMIT DELAY TIME FOR AUTOSEARCH	03H
	3BH	SCART BLOKING: - 00H = NO SCARTBLOCKING - 01H = SCART BLOCKING WHEN ANY PR. IS IN CHILD LOCK MODE.	00H Do not use. Just for UK models
	3CH	RET_COL: DELAY IN COLOUR IDENTIFICATION IN AUTO MODE.	40H
	3FH	CHECKSUM	7EH
04H	00H	ONE CHIP REGISTER 00:	80H
	01H	ONE CHIP REGISTER 01:	05H
	02H	ONE CHIP REGISTER 02:	9FH
	03H	ONE CHIP REGISTER 03:	20H
	04H	ONE CHIP REGISTER 04:	00H
	05H	ONE CHIP REGISTER 05:	CCH
	06H	ONE CHIP REGISTER 06:	44H
	07H	ONE CHIP REGISTER 07:	34H
	08H	ONE CHIP REGISTER 08:	21H
	09H	ONE CHIP REGISTER 09:	A1H
	0AH	ONE CHIP REGISTER 0A:	32H
	0BH	ONE CHIP REGISTER 0B:	B2H
	0CH	ONE CHIP REGISTER 0C:	32H
	0DH	ONE CHIP REGISTER 0D:	20H
	0EH	ONE CHIP REGISTER 0E:	20H
	0FH	ONE CHIP REGISTER 0F:	18H
	10H	ONE CHIP REGISTER 10:	1FH
	11H	ONE CHIP REGISTER 11:	00H
	12H	ONE CHIP REGISTER 12:	00H
	13H	ONE CHIP REGISTER 13:	20H
	14H	ONE CHIP REGISTER 14:	20H
	15H	ONE CHIP REGISTER 15:	00H
	16H	ONE CHIP REGISTER 16:	1FH
	17H	ONE CHIP REGISTER 17:	20H
	18H	ONE CHIP REGISTER 18:	2BH
	19H	ONE CHIP REGISTER 19:	00H
	1AH	ONE CHIP REGISTER 1A:	90H
	1BH	ONE CHIP REGISTER 1B:	90H
	1CH	ONE CHIP REGISTER 1C:	90H
	1DH	ONE CHIP REGISTER 1D:	00H
	1EH	ONE CHIP REGISTER 1E:	00H
	1FH	ONE CHIP REGISTER 1F:	00H
	20H	VPOS_50 (VERTICAL POSITION) 4/3 50 Hz.	12H
	21H	VAMP_50 (VERTICAL AMPLITUDE) 4/3 50 Hz	0FH
	22H	VPOS_60 (VERTICAL POSITION) 4/3 60 Hz	0FH
	23H	VAMP_60 (VERTICAL AMPLITUDE) 4/3 60 Hz	0FH
	24H	HSHIFT_60 (HORIZONTAL SHIFT) 60Hz	1DH
	25H	HSHIFT_50 (HORIZONTAL SHIFT) 50Hz	22H
	26H	FINVFH: STEP FOR FINE TUNING IN VHF BAND	00H
	27H	VHF1_STEP: THICK TUNING STEP FOR VHF1 BAND	A4H
	28H	VHF3_STEP: THICK TUNING STEP FOR VHF3 BAND	55H
	29H	UHF_STEP: THICK TUNING STEP FOR UHF BAND	55H
	2AH	LP_COARSE: THICK TUNING ADJUSTMENT FOR L'	02H
	2BH	BG_COARSE: THICK TUNING ADJUSTMENT FOR L AND BG	0AH
	2CH	BG_FINE: FINE TUNING ADJUSTMENT FOR L AND BG	00H
	2DH	LP_FINE: FINE TUNING ADJUSTMENT FOR L'	00H
	2EH	DELAY SEARCH: XXXXXXXX0 -> SHOWS 'PROGRAMME -' DURING AUTOSEARCH. XXXXXXXX1 -> DHOWS 'AUTO SEARCH' DURING AUTOSEARCH	00H

	2FH	VHF1_SP: STEP FOR AUTO SEARCH IN VHF1 BAND	0AH
	30H	VHF3_SP: STEP FOR AUTO SEARCH IN VHF3 BAND	05H
	31H	UHF_SP: STEP FOR AUTO SEARCH IN VHF BAND	03H
	32H	OLD_PROGRAM: FOR FLASHBACK RETURN	02H
	33H	UHFHIGH: UPPER WINDOW LIMIT FOR UHF	01H
	34H	VHF3HIGH: UPPER WINDOW LIMIT FOR VHF3	01H
	35H	VHF1HIGH: UPPER WINDOW LIMIT FOR VHF1	01H
	36H	PRG_NUMBER: CURRENT PROGRAMME NUMBER	03H
	37H	WAITSUP: UPPER LIMIT DELAY TIME FOR AUTOSEARCH.	0FH
	38H	WAITINF: LOWER LIMIT DELAY TIME FOR AUTOSEARCH	03H
	3BH	SCART BLOCKING: - 00H = NO SCARTBLOCKING - 01H = SCART BLOCKING WHEN ANY PR. IS IN CHILD LOCK MODE.	00H Do not use. Just for UK models
	3CH	RET_COL: DELAY IN COLOUR IDENTIFICATION IN AUTO MODE.	40H
	3FH	CHECKSUM	7EH
05H	00H	ONE CHIP REGISTER 00:	80H
	01H	ONE CHIP REGISTER 01:	05H
	02H	ONE CHIP REGISTER 02:	9FH
	03H	ONE CHIP REGISTER 03:	20H
	04H	ONE CHIP REGISTER 04:	00H
	05H	ONE CHIP REGISTER 05:	CCH
	06H	ONE CHIP REGISTER 06:	44H
	07H	ONE CHIP REGISTER 07:	34H
	08H	ONE CHIP REGISTER 08:	21H
	09H	ONE CHIP REGISTER 09:	A1H
	0AH	ONE CHIP REGISTER 0A:	32H
	0BH	ONE CHIP REGISTER 0B:	B2H
	0CH	ONE CHIP REGISTER 0C:	32H
	0DH	ONE CHIP REGISTER 0D:	20H
	0EH	ONE CHIP REGISTER 0E:	20H
	0FH	ONE CHIP REGISTER 0F:	18H
	10H	ONE CHIP REGISTER 10:	1FH
	11H	ONE CHIP REGISTER 11:	00H
	12H	ONE CHIP REGISTER 12:	00H
	13H	ONE CHIP REGISTER 13:	20H
	14H	ONE CHIP REGISTER 14:	20H
	15H	ONE CHIP REGISTER 15:	00H
	16H	ONE CHIP REGISTER 16:	1FH
	17H	ONE CHIP REGISTER 17:	20H
	18H	ONE CHIP REGISTER 18:	2BH
	19H	ONE CHIP REGISTER 19:	00H
	1AH	ONE CHIP REGISTER 1A:	90H
	1BH	ONE CHIP REGISTER 1B:	90H
	1CH	ONE CHIP REGISTER 1C:	90H
	1DH	ONE CHIP REGISTER 1D:	00H
	1EH	ONE CHIP REGISTER 1E:	00H
	1FH	ONE CHIP REGISTER 1F:	00H
	20H	VPOS_50 (VERTICAL POSITION) 4/3 50 Hz.	12H
	21H	VAMP_50 (VERTICAL AMPLITUDE) 4/3 50 Hz	0FH
	22H	VPOS_60 (VERTICAL POSITION) 4/3 60 Hz	0FH
	23H	VAMP_60 (VERTICAL AMPLITUDE) 4/3 60 Hz	0FH
	24H	HSHIFT_60 (HORIZONTAL SHIFT) 60Hz	1DH
	25H	HSHIFT_50 (HORIZONTAL SHIFT) 50Hz	22H
	26H	FINVFH: STEP FOR FINE TUNING IN VHF BAND	00H
	27H	VHF1_STEP: THICK TUNING STEP FOR VHF1 BAND	A4H
	28H	VHF3_STEP: THICK TUNING STEP FOR VHF3 BAND	55H
	29H	UHF_STEP: THICK TUNING STEP FOR UHF BAND	55H
	2AH	LP_COARSE: THICK TUNING ADJUSTMENT FOR L'	02H

	2BH	BG_COARSE: THICK TUNING ADJUSTMENT FOR L AND BG	0AH
	2CH	BG_FINE: FINE TUNING ADJUSTMENT FOR L AND BG	00H
	2DH	LP_FINE: FINE TUNING ADJUSTMENT FOR L'	00H
	2EH	DELAY SEARCH: XXXXXXX0 -> SHOWS 'PROGRAMME -' DURING AUTOSEARCH. XXXXXXX1 -> SHOWS 'AUTO SEARCH' DURING AUTOSEARCH	00H
	2FH	VHF1_SP: STEP FOR AUTO SEARCH IN VHF1 BAND	0AH
	30H	VHF3_SP: STEP FOR AUTO SEARCH IN VHF3 BAND	05H
	31H	UHF_SP: STEP FOR AUTO SEARCH IN VHF BAND	03H
	32H	OLD_PROGRAM: FOR FLASHBACK RETURN	02H
	33H	UHFHIGH: UPPER WINDOW LIMIT FOR UHF	01H
	34H	VHF3HIGH: UPPER WINDOW LIMIT FOR VHF3	01H
	35H	VHF1HIGH: UPPER WINDOW LIMIT FOR VHF1	01H
	36H	PRG_NUMBER: CURRENT PROGRAMME NUMBER	03H
	37H	WAITSUP: UPPER LIMIT DELAY TIME FOR AUTOSEARCH.	0FH
	38H	WAITINF: LOWER LIMIT DELAY TIME FOR AUTOSEARCH	03H
	3BH	SCART BLOKING: - 00H = NO SCARTBLOKING - 01H = SCART BLOKING WHEN ANY PR. IS IN CHILD LOCK MODE.	00H <i>Do not use. Just for UK models</i>
	3CH	RET_COL: DELAY IN COLOUR IDENTIFICATION IN AUTO MODE.	40H
	3FH	CHECKSUM	7EH

•PIF/AGC Adjustement

1. B/G AFT Adjustment

1. Connect the output of SSG (Standard Signal Generator) to the tuner IF output terminal.
•SSG output 38.9 MHz (CW) $\pm$ 5 KHz.
•SSG output level: approx. 90 dB μ V.
2. Enter into Service Mode.
3. Push «2» key on R/C. «FI OK» will appear.
4. Switch set OFF and ON again, setting is now memorized.

2. RF-AGC STR Adjustment

1. Receive the «COLOUR BAR» signal (Channel E-12). Signal strength: 57 dB μ V.
2. Enter into Service Mode.
3. Push CH until AGC STR appears on screen.
4. Push «7» key of R/C.«AGC OK» will appear.
5. Switch set OFF and ON again, setting is now memorized.

•Screen Adjustement

3. Focus Adjustment

1. Apply mains voltage of 220V AC/50HZ to TV.
2. Receive Philips pattern signal to a level between 60 and 80 dB μ V.
3. Set contrast to 10/10, brightness to 5/10 and colour 0/10.
4. Adjust focus potentiometer to obtain maximum definition.

4. G2 Adjustment

1. Apply mains voltage of 220V AC/50HZ to TV.
2. Receive cross hatch pattern signal to a level between 60 and 80 dB μ V.
3. Apply High Voltage Probe to Pin 8 of CRT socket
4. Adjust G2 potentiometer until obtaining 525V $\pm$ 10%.
5. Check BKGD. If it is necessary adjust BKGD according to instructions detailed in the next page.

•GEOMETRY ADJUSTMENT PROCEDURE

1. HOR POS

- Receive Philips pattern signal.
- When $\triangleleft$ $\wedge$ button is pressed, picture moves to the left.
- When $\vee$ $\triangleleft$ button is pressed, picture moves to the right.
- Adjust the horizontal location to obtain picture centering (Fig.1).

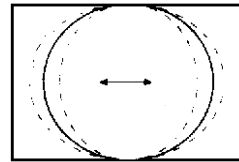


Fig. 1

2. VERT POS

- Receive Philips pattern signal.
- When $\triangleleft$ $\wedge$ button is pressed, picture moves up.
- When $\vee$ $\triangleleft$ button is pressed, picture moves down.
- Adjust the vertical location to obtain picture centering (Fig.2).

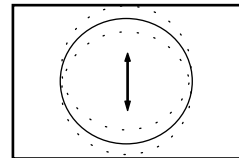


Fig. 2

3. VERT AM

- Receive Philips pattern signal.
- When $\triangleleft$ $\wedge$ button is pressed, vertical size of picture increases.
- When $\vee$ $\triangleleft$ button is pressed, vertical size of picture decreases.
- Adjust the vertical size to obtain picture overscan (Fig.3).

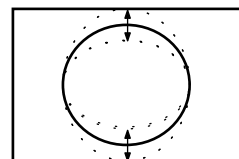


Fig. 3

•COLOUR ADJUSTMENT (BKGD) PROCEDURES

The following adjustments are required when the Picture Tube or IC801 are replaced, or may be necessary after adjustment of the G2 voltage.

1. «B-GAIN», «G-GAIN»

- Adjust G2.
- Tune a grey scale pattern.
- Adjust colour to minimum.
- Fix R-GAIN value to 50.
- Position colourmeter in the the left point of Fig.4.
- Using brightness and contrast buttons, select a luminance of ≈ 120 nits.
- Operate again in Service Mode and select location B-GAIN and G-GAIN to obtain colour coordinates:

$$X = 0.290 \pm 0.015$$

$$Y = 0.300 \pm 0.015$$

- Exit Service Mode and check colour coordinates «X» and «Y» at 20 and 120 nits. It may be necessary to repeat the same procedure or re-adjust the cuts as show the be below one.

2. «G-DC», «R-DC»

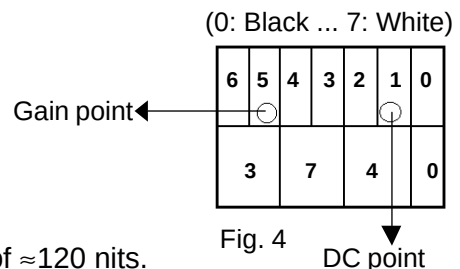
- Adjust G2, in the case that it has not been made previously.
- Tune a grey scale pattern.
- Adjust colour to minimum.
- Position colourmter in the the right point of Fig.4.
- Using brightness and contrast buttons, select a luminance of ≈ 20 nits.
- Operate again in Service Mode and select location G-DC and R-DC to obtain colour coordinates:

$$X = 0.290 \pm 0.015$$

$$Y = 0.300 \pm 0.015$$

- Exit Service Mode and check colour coordinates «X» and «Y» at 20 and 120 nits. It may be necessary to repeat the same procedure or the previous one.

NOTE: Locations «R» alter «X» coordinates; «G» alter «Y» coordinates; «B» alter «X» and «Y» coordinates.



DESCRIPTION OF SCHEMATIC DIAGRAM

SAFETY NOTE:

1. DISCONNECT THE AC PLUG FROM THE AC OUTLET BEFORE REPLACING PARTS.

2. SEMICONDUCTOR HEAT SINKS SHOULD BE REGARDED AS POTENTIAL SHOCK HAZARDS WHEN THE CHASSIS IS OPERATING.

NOTE:

1. The unit of resistance «ohm» is omitted (K=1000 ohms. M= Megaohm).
2. All resistors are 1/8 watt. unless otherwise noted.
3. All capacitors are μF , unless otherwise noted (P= μF).
4. The capacitor with Part No. RC-FZ9XXXBMNJ is designed to with stand 63V.

IMPOTANT SAFETY NOTE:

PARTS MARKED WITH « $\triangle$ » () ARE IMPORTANT FOR MAINTAINING THE SAFETY OF THE SET. BE SURE TO REPLACE THESE PARTS WITH SPECIFIED ONES FOR MAINTAINING THE SAFETY AND PERFORMANCE OF THE SET.

SERVICE PRECAUTION:

THE AREA ENCLOSED BY THIS LINE (---) IS DIRECTLY CONNECTED WITH AC MAINS VOLTAGE.

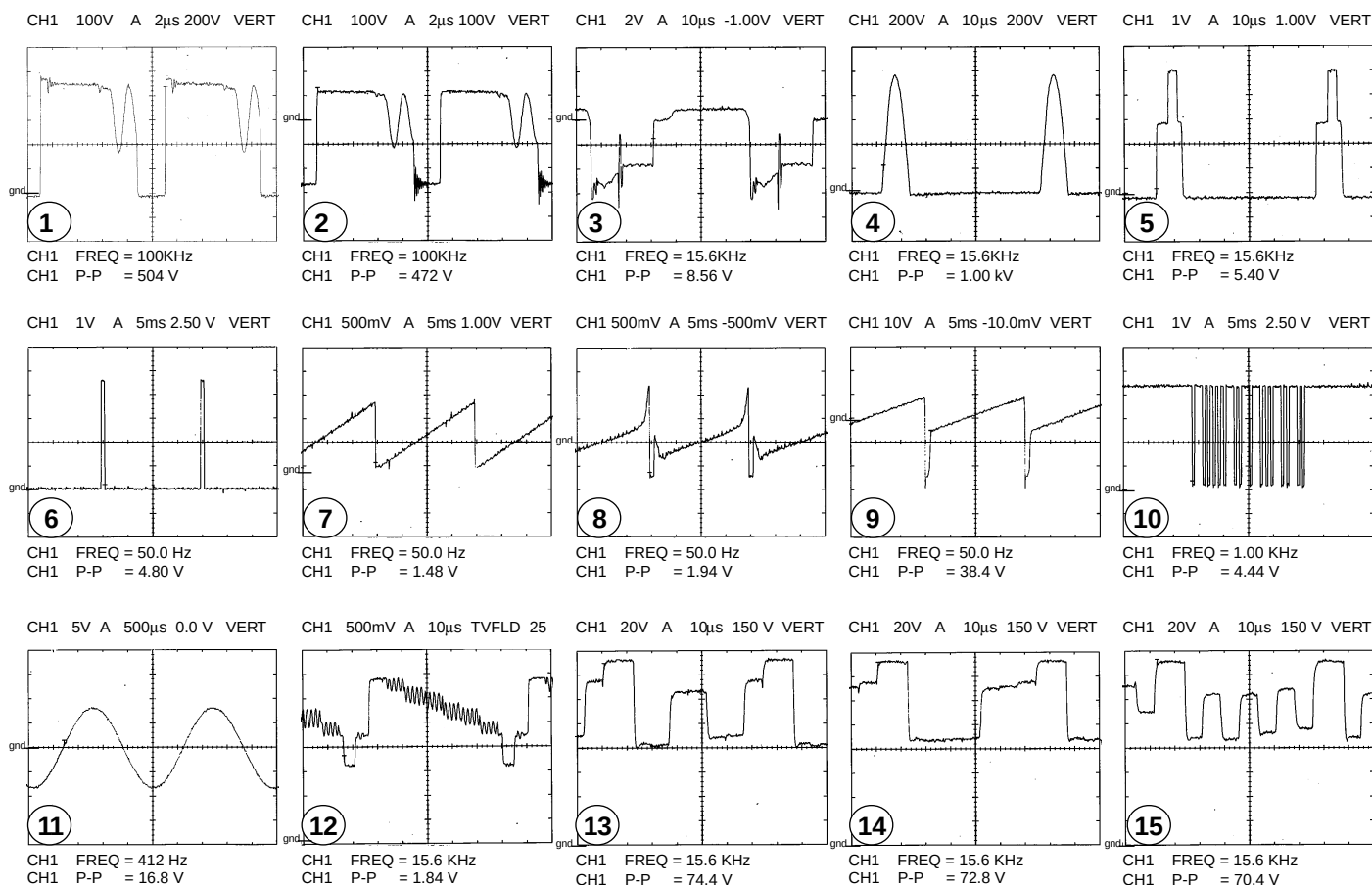
WHEN SERVICING THE AREA, CONNECT AN ISOLATING TRANSFORMER BETWEEN TV RECEIVER AND AC LINE TO ELIMINATE HAZARD OF ELECTRIC SHOCK.

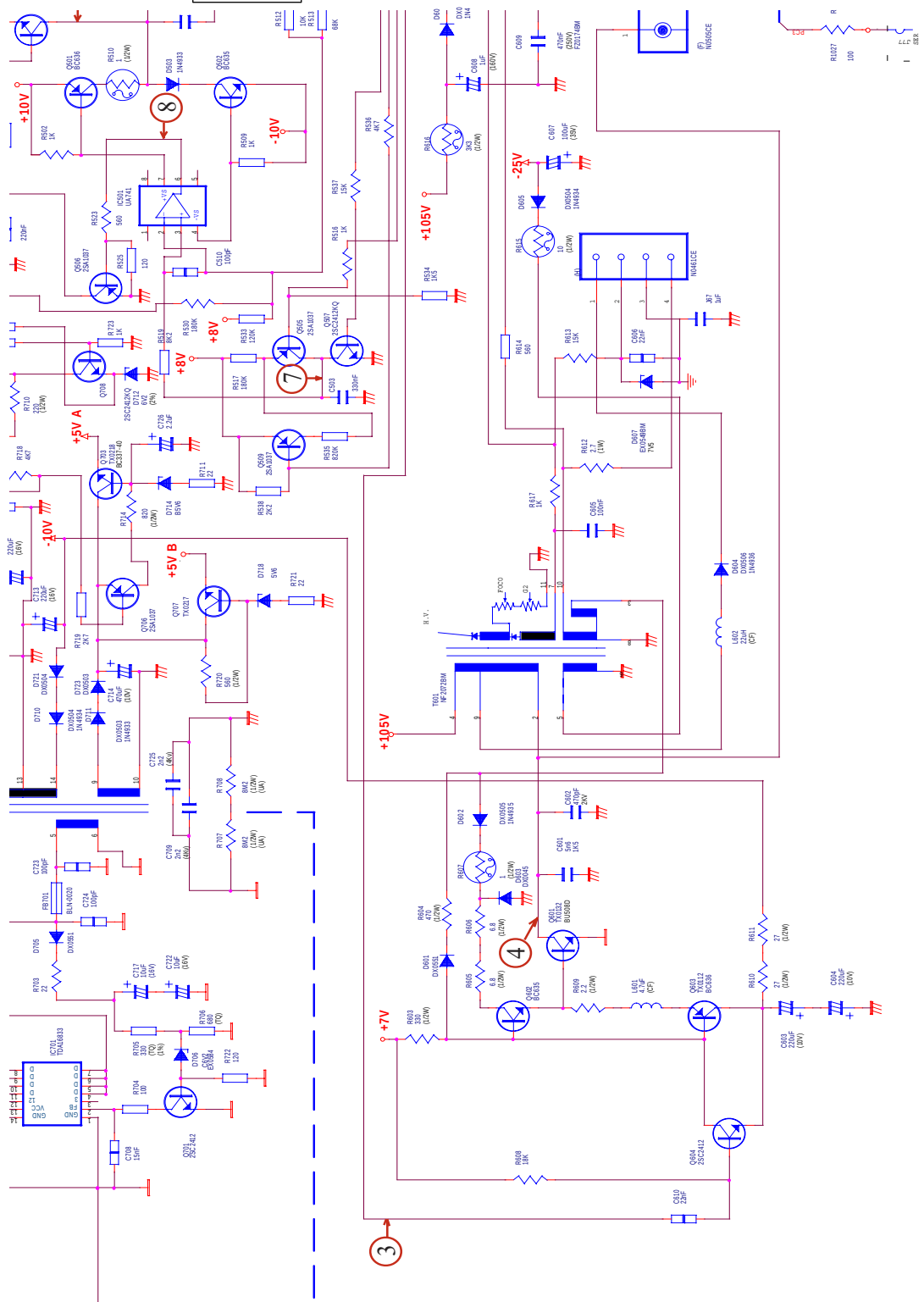
CAUTION

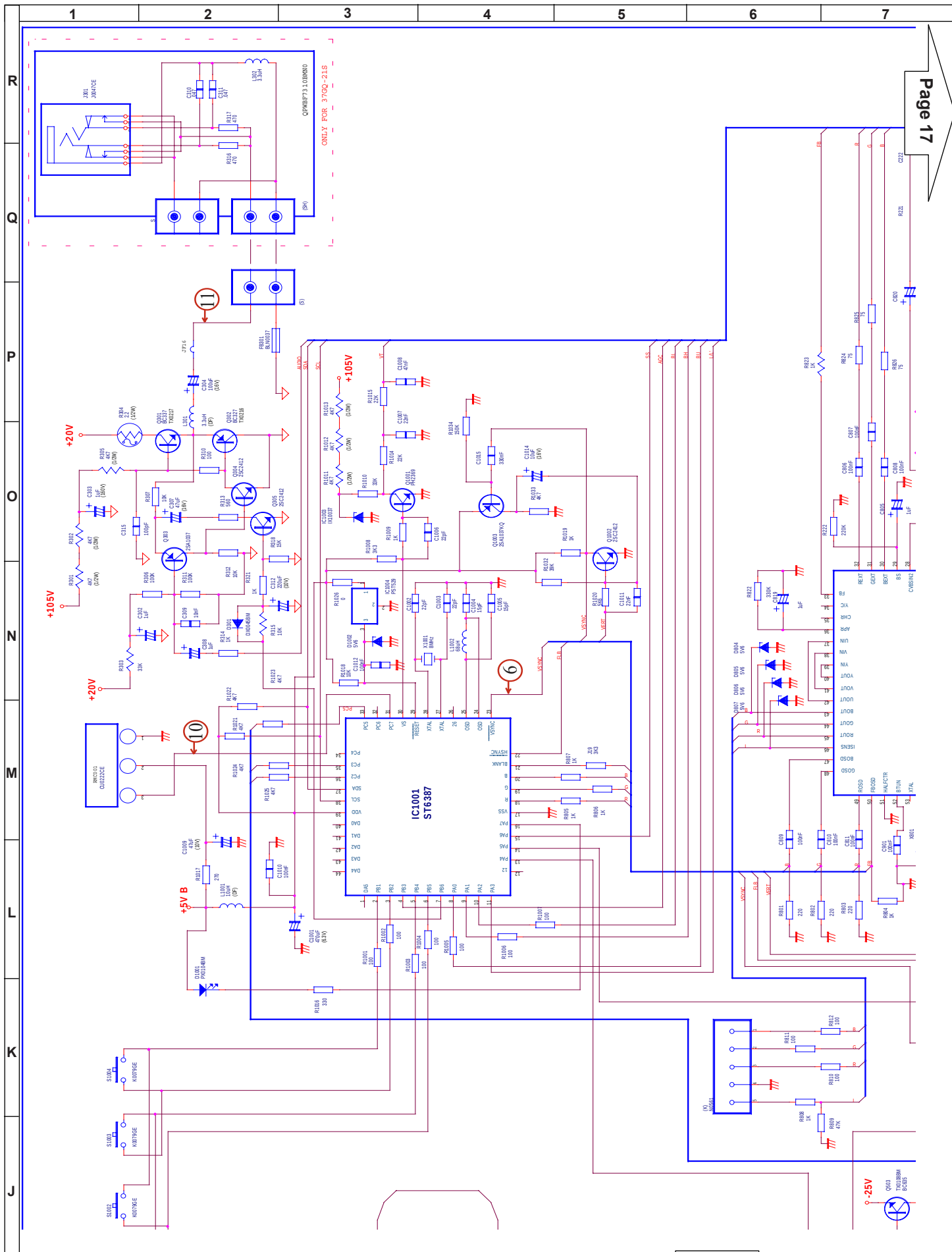
This circuit diagram is original one, therefore there may be slight difference from yours.

WAVEFORM MEASUREMENT CONDITION:

Colour bar genetator signal of 70 dB from RF input.

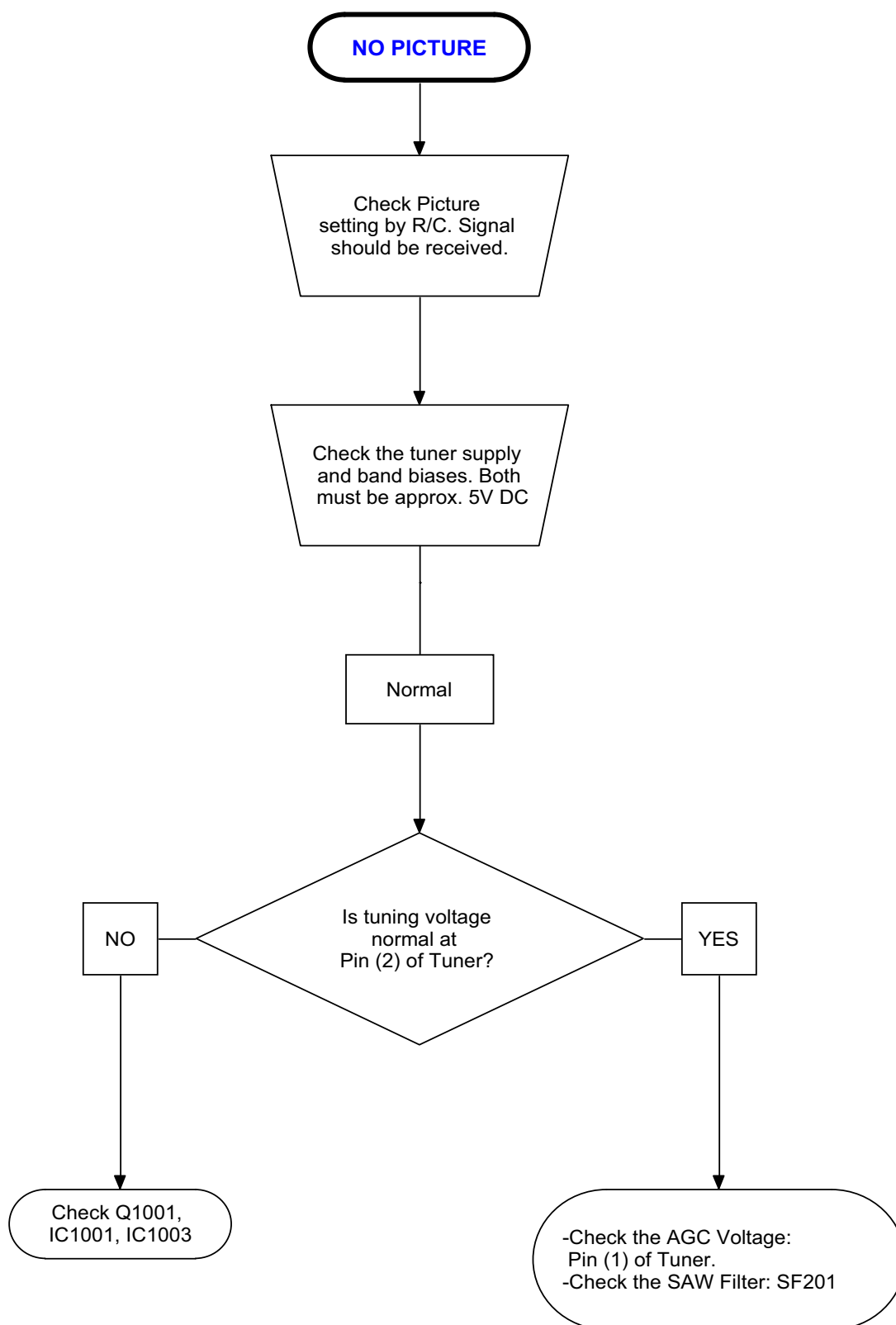


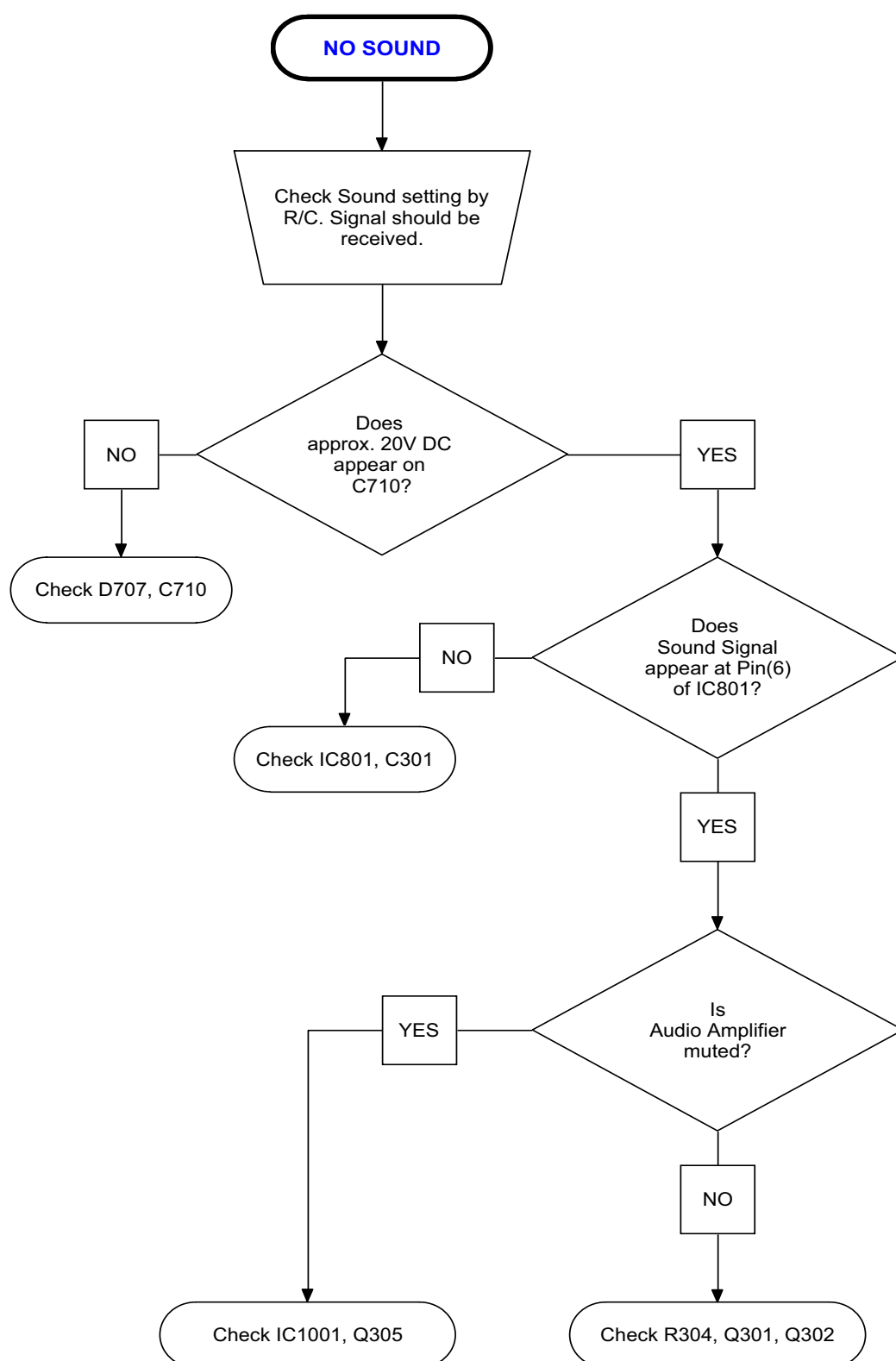


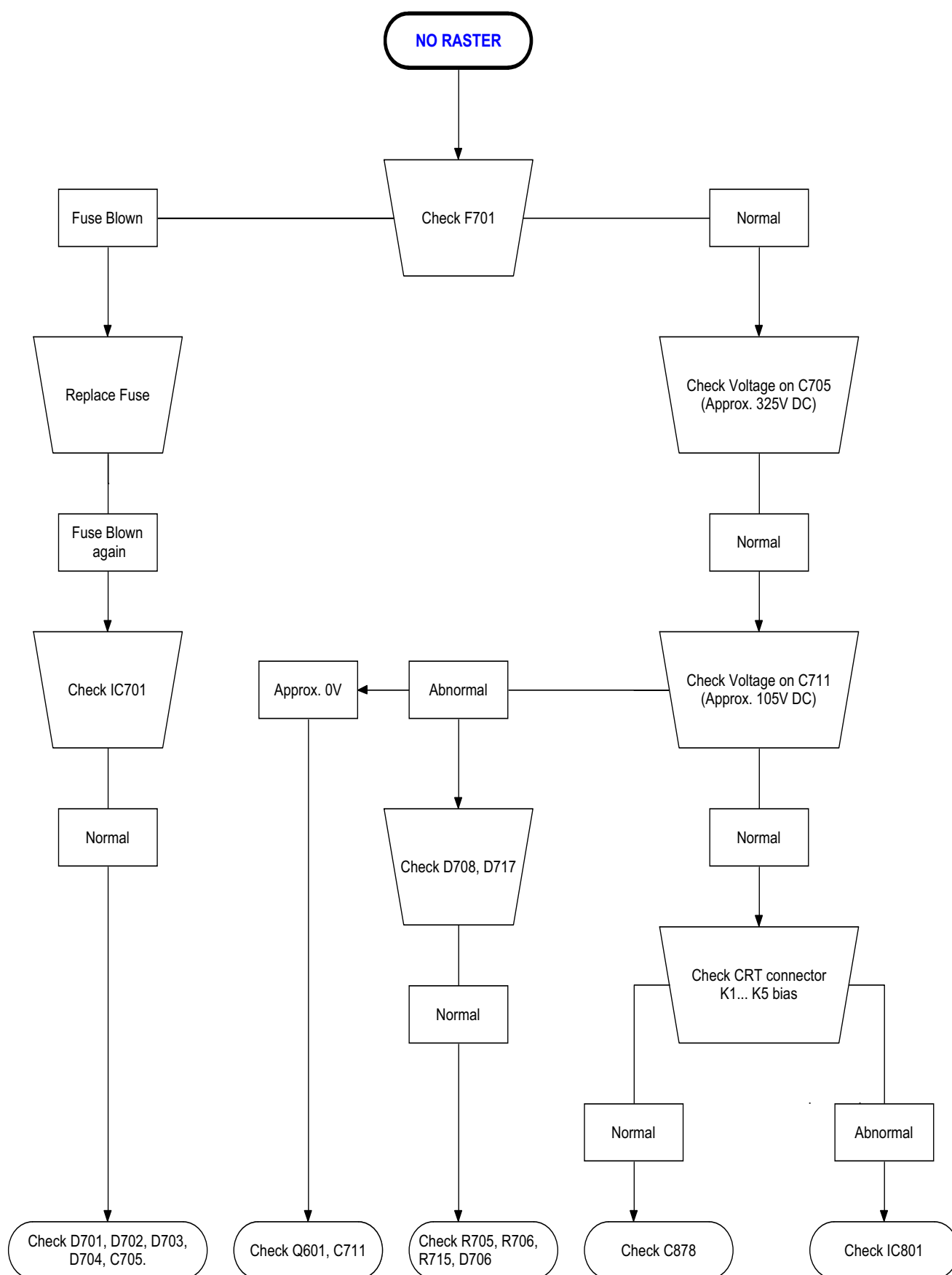


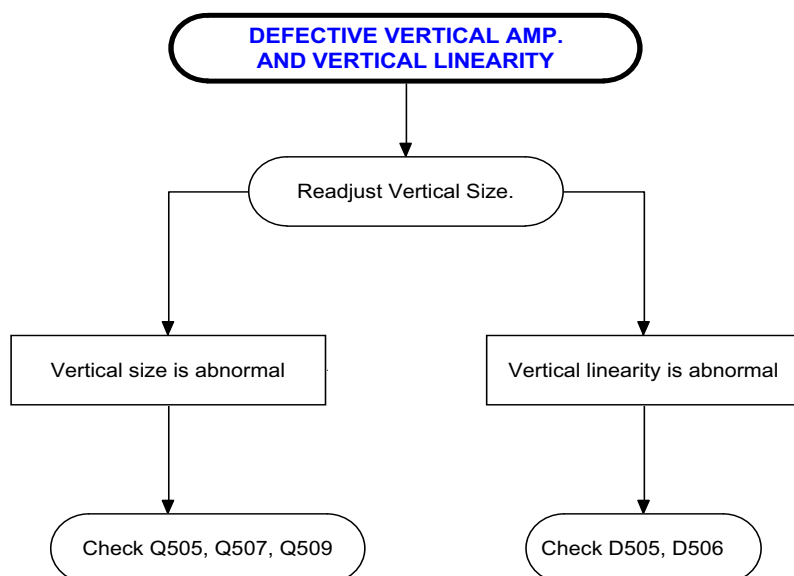
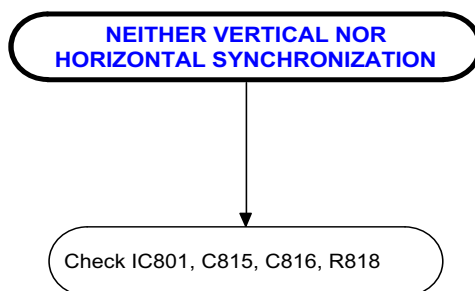
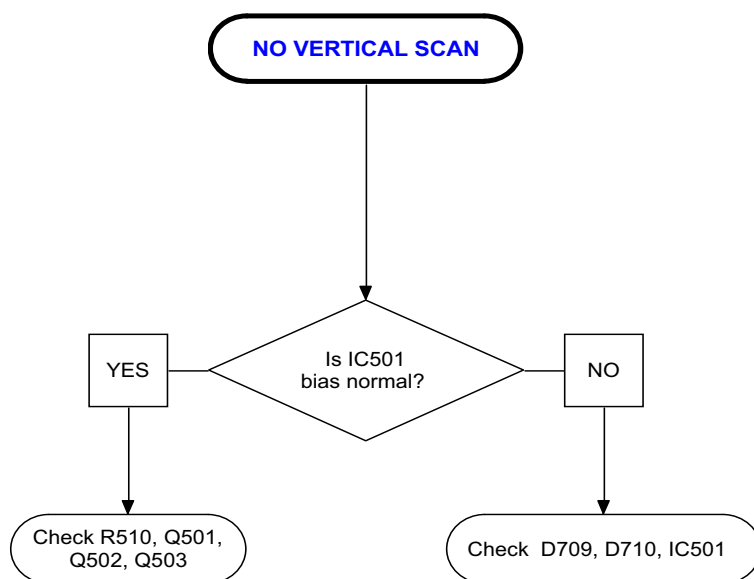
R

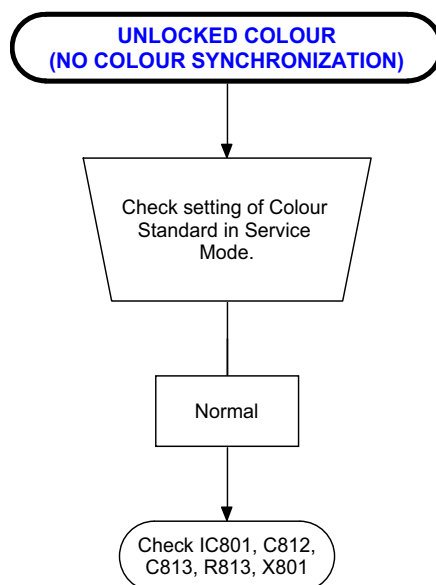
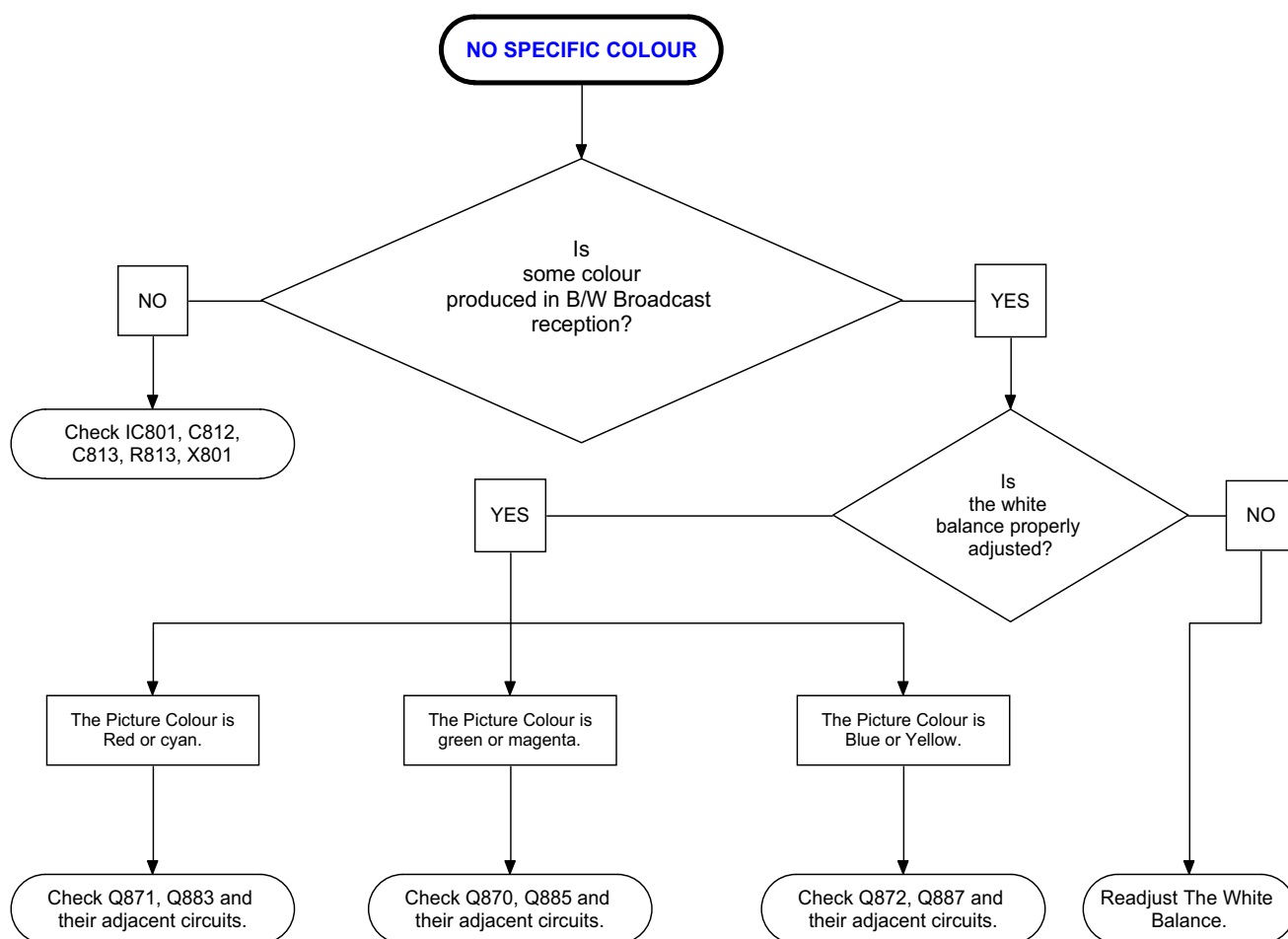
TROUBLESHOOTING TABLES.



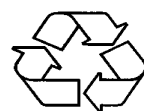








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